Zero Retries issue 0128 2023-12-08

Zero Retries is an independent newsletter promoting technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Now in its third year of publication, with 1100+ subscribers.

About Zero Retries

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus

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Web version of this issue - https://www.zeroretries.org/p/zero-retries-0128

Request To Send

Commentary by Editor Steve Stroh N8GNJ

This issue of Zero Retries was yet another issue where the **(!) Post too long for email** flag showed up way too early in the editing process, and was summarily dismissed. As you see from the above contents, there is just *so much going on* that's Zero Retries Interesting… that isn't showing up in the "mainstream" Amateur Radio media.

Amateur Radio Repeaters and MMDVM - Changing the Paradigm

One of the articles that I didn't include in this issue, that I spent some time on, but had to defer to a future issue of Zero Retries is an extended discussion of the implications of building (and rebuilding) Amateur Radio repeaters around a Multimode Digital Voice Modem (MMDVM), especially now that the MMDVM-TNC (data) capability will soon be a supported mode of the MMDVM. I think this new capability has profound implications for Amateur Radio repeaters.

Zero Retries Video in 2024

It's very early days, but it's worth mentioning in advance that Substack has, once again, addressed a pain point that I've been experiencing with Zero Retries - podcasting and video. As long time readers are aware, I've experimented with podcasting, and while it was promising, there were too many rough edges to podcasting in Substack, and it wasn't (in my opinion) a compelling *enough* experience to take time away from *writing* Zero Retries. At the

same time, video has become the dominant media for Zero Retries Interesting topics in Amateur Radio. For example, you can't *read* about DigiPi v1.8 anywhere… you have to *watch* KB6LYW explain it. But if podcasting had rough edges, doing video (for me) was even worse given that even working within Substack, you had to use YouTube… which is a whole 'nuther barrel of pain.

Substack claims to have fixed the video pain in a recent update of its platform in Video on Substack gets a major upgrade:

> **Creating video**
> Simple tools for publishing video posts, including generating transcripts and charging for subscriptions
>
> **Video podcasts**
> Many writers publish a podcast with video, often releasing exclusive material just for their paid subscribers. You no longer have to do this with an unlisted YouTube link. Now you can upload videos directly to your Substack and opt to automatically publish the audio as a podcast episode. If you have not yet set up or imported a podcast, you can do so any time from your dashboard.
>
> **Flexible paywalls for video episode**s
> For many podcasters, Substack's flexible paywalls provide an effective business strategy so that free subscribers and casual listeners can get a taste of premium content. This feature is now available for video podcast episodes, too. You can select a portion of your video to offer for free, which will also sync with the audio feed. For viewers on your Substack site, this free preview smoothly transitions into a prompt for paid subscriptions.
>
> **Interactive AI-generated transcripts**
> For every video post, whether published as a podcast episode or not, you will automatically get an AI-generated transcript. This transcript can be included on the post page, and viewers can click on any part of the transcript to jump to that section in the video.

In theory (I haven't yet begun to test out these new video capabilities), these improvements will work well for my evolving model for Zero Retries. I have always wanted to create videos such as:

- Presentations explaining various Zero Retries Interesting topics,
- Interviews with various Zero Retries Interesting people,
- Construction and other "dinking around" in N8GNJ Labs

Now these Substack enhancements seem to be ideal for my intended uses for video.

> Interactive AI-generated transcripts…
>
> … viewers can click on any part of the transcript to jump to that section in the video.

was *my* personal tipping point in deciding to use this new feature. Zero Retries (as long as I'm the primary creator) will be a text-first media, and being able to feature a transcript of a video, and allow readers to *click directly to an interesting video segment* is a capability I didn't realize I wanted until it was possible to do so.

At the moment, my plan is to begin to create videos using Substack. Founding members and paid subscribers will get to see the videos first (as a Thank You for financially supporting Zero Retries), and then they'll be available to all Zero Retries subscribers. Eventually I will release my videos on YouTube and process the audio track for a podcast.

73,

Steve N8GNJ

Leave a comment

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TAPR Mini-DCC on Saturday 2023-12-09

Don't forget that the TAPR 2023 "Mini-DCC" (Digital Communications Conference) will be held via videoconference on Saturday 2023-12-09 beginning at 12:00 Eastern. All of it will be Zero Retries Interesting. See the link for (interactive) Zoom. The Mini-DCC will be streamed on YouTube, but that link won't be known until the streaming commences.

- 12:00 Noon EST Start of DCC. 5 minutes to get people settled
- 12:05 Dave Larsen KV0S: Introduction/Welcome and TAPR SDR Development Progress and Challenges
- 12:25 Dave Witten KD0EAG: An Open Source Wideband HF Receiver Design
- 12:55 John Ackermann N8UR: An Inexpensive GPSDO for HF Receivers
- 1:10 P Phil Karn KA9Q: Developments in ka9q-radio
- 1:40 P 10 minutes QA for the previous 3 presentations
- 1:50 P 10 minute break (or overrun of QA)
- 2:00 P Walter Holmes K5HW: Current Open Source Digital Voice Techniques
- 3:00 P Mooneer Salem KA6AQ: A Low Cost FreeDV-based ESP32 Radio Interface

- 3:40 Jason Rausch K4APR: ESP32 APRS and LoRA Hardware
- 3:52 QA for Jason
- 4P END YouTube stream. Take 30 minute break
- 4:30PM to 5:30 PM EST: TAPR Annual Membership Meeting, all are invited.

ARDC Funds ARRL Foundation

ARDC grant to ARRL Foundation - $2.1M over three years for scholarships, education support, and club grants.

ARDC and ARRL Press Release:

Today, Amateur Radio Digital Communications (ARDC) and The ARRL Foundation announced a three-year commitment with over $2.1 million in combined funding to support scholarships for radio amateurs, radio technology for classroom teachers, and amateur radio club grants. This commitment reinforces a strong shared vision between ARRL The National Association for Amateur Radio® and ARDC to invest in the future of amateur radio through programs supporting the next generation of radio amateurs.

“ARRL and ARDC share a common vision for the future of Amateur Radio,” says The ARRL Foundation President David Norris, K5UZ. “The Foundation exists to support the next generation of radio amateurs, and we are so proud to collaborate with ARDC to make these programs possible.”

The ARDC Scholarship at The ARRL Foundation has supported nearly 100 amateur radio operators in pursuit of their educational goals since its inception in 2020. The renewed commitment will result in over 200 total scholarships, awarded over the next three years, for radio amateurs pursuing higher education, with scholarships ranging from $5,000 to $25,000. This competitive scholarship program is run through The ARRL Foundation Scholarship Program, and recipients who demonstrate academic excellence and financial need can use this funding for tuition, room & board, books, and other fees essential to advance their education. More information on eligibility and application deadlines may be found online at The ARRL Foundation website at www.arrl.org/scholarship-program.

The ARRL Club Grants program was introduced in 2022 with initial funding from ARDC. Thanks to this next round of collaboration, the ARRL Club Grants Program will continue in 2024. Beginning with significant funding from ARDC in 2022, the ARRL Club Grants program is administered by The ARRL Foundation, together with the ARRL Field Organization. These club grants are critical to the future of amateur radio because of the importance of mentoring and helping licensees become active in Amateur Radio. ARRL encourages clubs to revitalize this critical aspect of their role by applying for funding to support programs in one of the available categories, including ham skills development, STEAM learning and education, or club station improvement, among others. This transformational program will launch in the Spring of 2024. More details will be provided through upcoming informational sessions and on The ARRL Foundation website at www.arrl.org/club-grant-program.

Additional funding from ARDC will extend the effectiveness of ARRL outreach programs to teachers and schools, including the ARRL Teachers Institute for Wireless Technology. Monies will be used to purchase equipment to allow students to get hands-on STEM experiences through radio communications and radio technology.

ARRL CEO David Minster, NA2AA, is inspired by the opportunities this collaboration presents. “These grants are a great exercise in teamwork and shared vision between our organizations; ARDC has resources to enable significant advancements in amateur radio, and ARRL brings the strength and reach needed to implement these great programs,” he said.

“On behalf of ARRL and The ARRL Foundation, I want to express my sincere thanks for the strong vision and generosity of ARDC,” says ARRL Director of Development Kevin Beal, K8EAL, “Through its philanthropy, ARDC is supporting transformational programs, which will have a significant impact on amateur radio’s future.”

ARDC Executive Director Rosy Schechter, KJ7RYV, adds: “It’s a joy and an honor to enable amateur radio clubs across the country to flourish, and we’re grateful to work with the ARRL to make it happen. We loved seeing the projects from the first round of funding and look forward to seeing what comes next.”

“Clubs are the heart and soul of amateur radio, and outreach is core to ARDC's and ARRL's shared vision," says ARDC Board Member Ria Jairam, N2RJ. " We are proud to support amateur radio clubs and their projects through these transformational grants.”

…

Comment by Steve Stroh N8GNJ

It’s good to see that ARDC and ARRL are working together *at this scale*. The ARDC-funded scholarships of reasonable substance have notably raised the profile of ARRL, ARDC, and Amateur Radio in general to students intending to pursue higher education, especially in technical subjects. This announcement is a missing puzzle piece in the ARDC grants as the final “quarter” of 2023 ARDC grants seemed a bit “light”. I hope that more clubs will be able to get some funding from the Clubs Grants Program to improve their programs and capabilities. I’ve participated in Amateur Radio clubs where there was just one big expense that seemed insurmountable, like the repeater needed a new duplexer, or power amplifier, etc. One advantage of ARRL club grants versus grants from ARDC is ARRL’s ability to provide grants to clubs that don’t have a 501(c)(3) status.

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What’s New at DLARC - 100,000 Items!

By Kay Savetz K6KJN, Internet Archive's Program Manager, Special Collections

The monthly update from Digital Library of Amateur Radio & Communications (DLARC).

Below is the **correct** version of this article - the earlier version (that was emailed and initially published) was a draft version. I regret the error. - Editor

I'm thrilled to announce that the Digital Library of Amateur Radio & Communications has passed the 100,000 item milestone! A hundred thousand books, magazines, catalogs, manuals, podcast episodes, and other items related to radio.

I've created a DLARC Wantlist, a web page that lists specific items that the library is looking for to fill gaps in the collection. Please check it out — you just might have something that the community desperately needs. I will keep that page updated a the library's needs change.

I recently learned that SGC, a company that manufactured HF gear for more than 50 years, went out of business earlier this year. Its web site is gone, so I scraped every document that I could find from the Wayback Machine, and ended up with a collection of 176 manuals, schematics, product slicks, and catalogs from the defunct company.

Ondes Magazine was a French amateur radio magazine that was published from 2002 through 2008. It is now included in DLARC with permission of the publisher, Jean-Phi F5GKW. (If you read French or German and want to help me add material to DLARC, would you contact me? There are several other non-English magazines I'd like to get permission for, but I need help.)

DLARC also added an archive of Mediageek Radioshow, which was a weekly public affairs radio show covering grassroots and independent media. The program ran from 2002 through 2008, and we have all the episodes. It reported on and examined issues like low-power FM and unlicensed broadcasting, public access TV, and community radio.

The staff of KDVS 90.3 FM, student and community radio station based in Davis, California, asked for my help in archiving their programs. It seems their server that automatically records off the air has been flailing and failing for a long time. I retrieved what I could from the dying machine and ended up with an eclectic collection of programs that aired February 2020 through April 2023.

DLARC also added 53 issues of the Utah Valley Amateur Radio Club "Shack" newsletter. (A bonus for me: I didn't have to do anything! A club representative uploaded them to Internet Archive. Thanks!) We also added more than 500 videos about ham radio courtesy of K7AGE and N7KOM, who allowed their YouTube channels to be archived in DLARC.

Also new is an archive of selected comments submitted to the Federal Communications Commission via the Electronic Comment Filing System (ECFS) related to ham radio. I'm not going to add all 40,000+ comments ever submitted that mention amateur radio, but I'm trying to cherry pick the best stuff. This little project started when Steve Stroh was looking for Bruce Perens' 2017 comment regarding FCC Docket 17-215, the Technological Advisory Council's inquiry into reforming technical regulations. Steve called the comment "the best rethinking of the Amateur Radio regulations that I've seen in the last decade."

Secret tip: If you want to know about every new addition to DLARC as soon as they're added, here's the magic link to spy on new additions as we add them. (You can also get that link as an RSS feed.) Note that you might see items before they're fully baked with metadata and thumbnail images.

I was interviewed by Eric at the QSO Today Podcast about DLARC (admittedly, we spent the first half of the interview talking about my first love, Atari computers.) And just two episodes later, Eric interviewed Zero Retries Interesting Steve Stroh!

Digital Library of Amateur Radio & Communications is funded by a grant from Amateur Radio Digital Communications (ARDC) to create a free digital library for the radio community, researchers, educators, and students. If have questions about the project or material to contribute, contact me at kay@archive.org.

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10GHz - N4HY Says Use It or Lose It

In an recent Facebook post, Bob McGwier N4HY said some interesting things:

> Ham radio operators, the move towards giving 10.5 GHz to "GPS" like services is likely a direct threat to 10.1 GHz. The builders of receivers will want to have lousy cheap front ends and will want large buffer zones near the main band. Fight or we lose that band and we cannot lose this unbelievable resource.
>
> The only way to come close to defending it in Regional 2 (the Americas) is to use it. That is a plan and I do have a plan and this will become apparent shortly after the New Year.
>
> Nathaniel Frissell and I are about to propose to ARDC. This should help and ARDC has funded things which will help.
>
> I am going to fight hard for widespread use of 5 and 10 GHz with the remainder of my technical life.

Over the past year, I have tried to engage N4HY, including reaching out on this recent posting, with no success. So I don't have any additional context to add to this.

I had high hopes that N4HY would be active in an effort to create an Amateur Radio payload (or satellite) for the Western Hemisphere, as discussed when he resigned from the ARDC Board of Directors in December 2022:

> Bob will continue to be involved in amateur radio, with plans to work with Dr. Jonathan Black of Virginia Tech's Hume Center Aerospace and Ocean Systems Lab on the design and construction of a geostationary satellite payload. The design work will take place on the Virginia Tech campus and will rely heavily on amateur radio groups, such as Ham Radio Science Citizen Investigation (HamSCI). One of the goals of this project will be to protect the 5 and 10 GHz amateur radio bands and prevent them from being allocated to other services. Such a project will take a great deal of his time and attention. In addition, Bob wants to avoid any potential concern about conflict of interest should this project eventually request funding from ARDC.

Since that promising statement… *nothing heard* from N4HY about Amateur Radio GEO satellites, until this recent Facebook post. I look forward to hearing more from N4HY in early 2024.

In the meantime, N4HY's overall statement that Amateur Radio's use of 10 GHz is endangered, is good advice and well-stated. 10 GHz is endangered *now*, and a potential GEO satellite that might get to orbit in a few years, and take a few more years for Amateur Radio Operators in the Western Hemisphere to begin to use in numbers reasonable enough to count as "significant use" especially for space communications. That might not be enough. To discourage a takeover of 10 GHz by Radio Navigation Satellite Systems (RNSS), I suggest that…

Amateur Radio Needs a Turnkey 5 GHz Up / 10 GHz Down Groundsat Package and Groundsat / GEO User Terminal

What I think *could* make a difference regarding "significant use" by Amateur Radio of 10 GHz is if there was a reasonable "package" available for Amateur Radio Operators to create a "Groundsat" to take advantage of any Amateur Radio organizations that have access to high points — mountaintops, skyscraper rooftops, television broadcast towers, etc.

Such a package would have to be compact and largely self-contained needing only power and communications links going down the tower. Antennas, all radio hardware, etc. would be on the tower. Or maybe have the RF package as one unit, and independent 5 GHz and 10 GHz panel antennas.

We also need a corresponding user terminal that would receive on 10 GHz and transmit on 5 GHz.

The use case for such a Groundsat would have to be advanced digital modes - such as digital video, downlinking of multiple audio streams, perhaps a wideband receiver on the mountaintop, etc. In short, for someone motivated to try to receive 10 GHz from a high point in the area, there needs to be something worth receiving.

If such packages (both the Groundsat and the user terminal) were developed, they could be deployed in a *much shorter timeframe than a satellite launch* and begin much more significant use of Amateur Radio 10 GHz.

ARDC does fund development projects such as creating a Groundsat package and a user terminal. See the section Research and Development on their Grantmaking Categories and Goals page. At a minimum, reference designs could be created that could be replicated by motivated groups and individuals.

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N8GNJ's Extended Response to QSO Today Podcast Interview

By Steve Stroh N8GNJ

*As mentioned in **Zero Retries 0127**, I was interviewed by Eric Guth 4Z1UG for his QSO Today Podcast. 4Z1UG had sent along a series of questions to guide the interview… which I answered, but didn't return to him for his background preparation (oops…). So, here are those notes, which go into a bit more depth than the podcast discussion.*

Lets start at the beginning of your ham radio journey - when and how did it begin?

I was always curious about electronics from pre-teen. I found some old copies of 73 Magazine at the local library and from those I learned that Amateur Radio was a much bigger world for folks like me interested in electronics. But in my small town, there wasn't much to encourage my interest in electronics until I took the two high school electronics classes, which I did well in.

Do you remember your "Elmers"[1] or mentors in the hobby? Who were they and how did they help you?

One primary influence was when I began to get interested again in Amateur Radio as a young adult was Maynard Weston W8MW (Silent Key). When I got my Amateur Radio license and started asking questions about Packet Radio he directed me to the cool, hip, happening Amateur Radio club in the area, the North Coast Amateur Radio Club. NCARC was a very active club with transmitter hunts every Friday evening (those were a riot to listen to on the repeater), interesting monthly meetings, etc. NCARC wasn't much into HF or contesting, which suited me.

Another Elmer was a Packet Radio Bulletin Board System (PBBS) sysop, Tom Kryza KB8CI who was a kindred spirit about packet radio. As a PBBS system operator, KB8CI was even more into Packet Radio than I was, so when I got to talk to him, I was always learning.

My most influential Elmer was a coworker, Ken Koyan K8TV. He had done it all in Amateur Radio and was patient with all my questions, and I got to work with him every day. I was the only other Amateur Radio Operator at work, so I think Ken enjoyed Elmering me.

When did you get your first license? How old were you?

My first license was a Novice during a club testing session in the Cleveland, OH, area in March 1985, age 25. My assigned Novice call was KA8WCL which I hated. The memory is hazy now, but I think I upgraded to Tech within a year so I could finally transmit on VHF / UHF to use repeaters and packet radio. A big bonus for getting my Tech license is that I was eligible for a new 1x3 call, and I was assigned N8GNJ which I still have.

I could have had my license as early as age 17. I took the Amateur Radio test (Novice, I think) at the Detroit FCC as I didn't know any Amateur Radio Operators in my hometown that could administer a Novice test. I passed the written and code portions (multiple choice) but when they turned the page over and saw that I had copied some dots and dashes and then puzzled them out visually, the examiner flunked me. He said I "had not embraced the spirit of the test".

I upgraded to General roughly around 2005.

What was your first rig?

My first rig was a used Heathkit HW-2036A which was Heathkit's first synthesized (no crystals needed) for 2 meters (144 - 148 MHz). I think I bought it on the same trip to Detroit. I had that radio for seven years or so and only received with it to listen to repeaters (which was a lot more fun in those days). I still have that HW-2036A.

How did the amateur radio affect the decisions that you made for your education and career?

I became an electronics technician, and I think I was better than average because it wasn't just a job for me because I had Amateur Radio to apply those skills. Once I got involved in packet radio, it was wonderful for me - computers plus networking plus radio.

Amateur Radio directly influenced two major career changes. The first was that I was promoted from being an electronic technician to a salaried position to do regression testing for an experimental computer system onboard a military aircraft. If you've read Tom Clancy's "The Cardinal of the Kremlin", the computer system that operated the optical system on the "Airborne Optical Adjunct" (AOA) aircraft was the one that I did testing on. It was surreal to read that first chapter of the novel in an excerpt in an issue of Popular Mechanics… *while I was sitting on the plane* that was described in that chapter. (My regression testing mostly consisted of waiting while the computer ran a set of simulations, usually unsuccessfully, which is why I had to be a decent writer to describe what the computer was doing when it crashed.) A primary requirement for that position was the it required you to write well, and the person that hired me (who was also an Amateur Radio Operator) for that position had been reading my articles in the original Zero Retries (newsletter of the Northwest Amateur Packet Radio Association - NAPRA) and knew I had a good grasp of computer technology and proven ability to write.

The second career change resulted from a chance encounter at the 1996 Digital Communications Conference. (I tell this story reasonably well in the podcast.)

What affect has ham radio had on your family life?

I didn't think Amateur Radio had much effect overall in my family other than my wife had to explain to her friends who visited our house "what the weird antennas were". [After some later thought…] Of course, there were the annual "vacations to the Oregon Coast" that just happened to coincide with the annual SEA-PAC Amateur Radio convention. And of course, my periodic pilgrimages to Hamvention which Tina tolerated with good grace. My wife Tina eventually "fulfilled a campaign promise" after some years of marriage and became licensed as KD7WSF. One thing that Tina appreciates about Amateur Radio is its emergency communications capability; she was impressed with the utility of the "Skywarn" program when we lived in the Cleveland, Ohio area where tornadoes were a regular occurrence.

It was gratifying to learn that my daughter *had actually been paying attention* to my "playing radio" as she discussed knowing pretty well what Amateur Radio was about during an interview for a job that involved Amateur Radio. Merideth is now licensed as KK7BKI.

What is your favorite operating mode?

Data modes on VHF and UHF. On my short list is satellites, setting up an automatic tracking system to help download telemetry.

What is your current rig?

The radio I use most at the moment is a Kenwood TM-V71A - it's an ideal radio for 2m (144 - 148 MHz) and 70cm (420 - 450 MHz) "sound card" data modes like 9600 packet radio and VARA FM because it has a "flat audio" interface, and its parameters such as frequency, etc. can be remotely controlled. I now have several of these radios. Unfortunately, they're now out of production.

What do you think is the biggest challenge facing amateur radio today?

The societal perception that Amateur Radio isn't relevant any more. In this era, Amateur Radio continues to exist by the grace of it being a legacy radio service in most countries and some lingering nostalgia of providing emergency communications. The pressures to reallocate Amateur Radio spectrum are intense, and growing, and if Amateur Radio is to have a future, it will have to justify its utility to society.

Emergency communications is a fading justification for maintaining Amateur Radio spectrum in the era of capable and pretty reliable systems like FirstNET, Iridium, and most recently, Starlink.

Fortunately, there are some significant trends that are helping to grow the numbers of Amateur Radio Operators. One is ARDC providing funding for a lot of different Amateur Radio activities - clubs, new systems, college Amateur Radio stations, etc. Another is that there's some significant outreach to techies at conferences such as DEF CON to inform techies just how useful it can be to have an Amateur Radio license.

What most excites you about amateur radio now?

Software Defined Radio is completely changing radio technology. I just mentioned in Zero Retries that Analog Devices now has a direct sampling and generation chip that will work up to 10+ GHz. No mixers, etc. or other hardware or techniques from analog radio are needed (well, maybe a bit of filtering).

ARDC provides grants of $5-6M per year - they're kind of acting like venture capital for Amateur Radio projects, and they're enabling some really, really cool new innovations in Amateur Radio.

It's so much easier and less expensive to develop new hardware these days, especially for the Amateur market where you can offer it as a "kit" (assemble the boards, or solder an antenna connector) and thus avoid the expensive certifications and testing. Some amazing stuff is available out there, if you know where to look (other than the HRO or DX Engineering catalog).

I hope that someone is going to step up and create a Software Defined Transceiver for VHF / UHF that will transmit at reasonable power levels. We're getting close - I hope ARDC can "be flexible" to fund a pilot project that can develop reasonably reproduced hardware.

Packet Radio... actually data communications... networking is coming back in Amateur Radio, including dedicated Amateur Radio microwave networks such as AREDN.

I really hope that we can figure out how to get a GEO payload for the Western Hemisphere like QO-100. The QO-100 users have a heckuva lot of fun.

What advice would you give a new or returning ham radio operator?

It's sad to say this as a negative, but don't rely on QST or CQ to give you a good overview of what's really happening in Amateur Radio. Knowing that *so* much was going on, and *not* reading about it in QST or CQ was frustrating to the point that I started my own newsletter, Zero Retries, *to* highlight the stuff I found interesting. As much as digital technology is changing Amateur Radio, it's rarely featured in QST, and only every other month in CQ in a column by my friend Don Rotollo N2IRZ.

One of the best ways to discover the cool stuff happening in Amateur Radio is to browse YouTube. Another is to seek out mailing lists and Facebook groups for specialized interests. I monitor a lot of mailing lists that are just about one software package or one type of radio. I'm pretty sure there's now a

mailing list for nearly every mode and unique piece of hardware.

There are two Amateur Radio groups on Reddit that offer some good info, but the "Redditors" can be unkind to newbies that don't do their homework before asking questions.

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ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

ARDC 2024 "First Quarter Deadline" is 2024-02-01

In ARDC's November, 2023 newsletter, this "early" deadline for submitting grant requests was mentioned:

> The first deadline for submitting a grant application in 2024 is February 1. Applications received after this date will be reviewed after April 1, 2024 (no fooling!)

44Net (AMPRNet) Wiki Requests Volunteer Editors

Also in the ARDC November, 2023 newsletter was this request:

> **Seeking AMPRNet Wiki contributors in 2024!** wiki.ampr.org could use some updating, and we're seeking volunteers who want to help. If you're a current contributor or are interested in contributing, please email us at contact@ardc.net or join the ARDC Wiki subgroup.

Utah Digital Communications Conference Scheduled for 2024-02-03

> You are invited to the 7th Annual Utah Digital Communications Conference held on February 3rd, 2024, at the Salt Lake Community College Miller Campus in Sandy, Utah. This is a great one-day event to learn about digital modes and more about the Amateur radio hobby. We hope you will be able to join us for this event.
>
> Registration and schedule information can be found at: Utah-dcc.org. For questions, contact: utahdcc@gmail.com.
>
> **Call For Proposals**
>
> We are looking for presentations on all things digital in Ham Radio, specifically presentations on using Raspberry Pi or Arduino-type computers with Ham radio. Hot Spots, DMR, D-STAR, HF digital modes, working satellites, Mesh, APRS, Winlink, antenna building, field operating (POTA, SOTA), building your battery packs, etc. We will also have some display tables where you can display projects, etc.
>
> Could you submit a presentation you can do or ask someone with a great one to submit?

See the link for Registration and Call for Proposals links.

DigiPi v1.8 Available (YouTube)

On his KM6LYW Radio YouTube channel, Craig Lamparter KM6LYW discusses this recent update of the DigiPi software for the Raspberry Pi 5 and the most recent Raspberry Pi OS - Bookworm:

> DigiPi 1.8 is based on Raspberry Pi OS bookworm which includes [support] for the new scalding-fast Raspberry Pi5.

I'm looking forward to building a pair of DigiPi units for myself and my daughter KK7BKI. The big attraction is that DigiPi is designed to operate headless - no attached (or remoted) keyboard, mouse, or video. Everything in the DigiPi is designed to operate from a remote web browser.

DigiPi Interface Board Developed (Video)

Speaking of DigiPi, there are four hardware components to a DigiPi:

- Raspberry Pi computer (which can be a Raspberry Pi Zero, but doesn't have to be)
- The audio board, usually a "Fe-Pi"
- The (optional) onboard display
- "Everything else" which were discrete components soldered onto the various boards.

Until recently, the "Everything else" was challenging for those new to soldering. But now, Randy Robinson N7EBB created a simple interface board kit to simplify the construction of a DigiPi. See the video from the 2023-11-21 MBARC Digital Club Meeting beginning at 28:27 for details.

Develop a Comprehensive History for Evolution of TNCs?

I received this email from Steve Lampereur KB9MWR :

> The TAPR webpage has some information but I'd really like to see a more comprehensive history written somewhere. I'd be willing to donate to the cause because that case history can be a good lesson for how to go about other projects, be that M17 or really anything.
>
> What I'd be specifically interested in is how long and what behind the scenes work got the TNC into commercial production? When I think TNC's today, Kantronics and Spirit come to mind, I know AEA and others also produced them. I assume these companies were already creating related products for scada and other telemetry used outside of the ham market? I never really paid much attention to commercial magazines like RF design and Mobile Radio Technology in the 90's to get an idea if any of the various amateur radio kits (from TAPR or other places) were making those publications and thus able to garner the attention of the commercial market ?
>
> I think the dynamics of manufacturing within the US are different now, as there is far less, but still I think a detailed history of how the TNC came into commercial production would be valuable thing to document. It doesn't have to be written, it could even be done by one of the ham video podcasters, AVRN, HamRadio Live etc.
>
> If you know of someone who might be interested and have the time to take on a task, I'd encourage you to pass this idea along.
> Steve Lampereur KB9MWR - kb9mwr@qsl.net

KB9MWR's blog, Advancing Ham Radio.. different ideas has been required reading for me, for years, and was one of the inspirations for Zero Retries.

With no research to verify dates, etc. I replied:

> Very, very, very tersely, Amateur Packet Radio was invented by some hams in Montreal, QC. They created some kits, or something to get some activity going. They realized they were onto a good thing and some of the hams created DataRadio which sold exclusively to commercial customers.
>
> Inspired by the Montreal activity, some hams in Vancouver, BC (Vancouver Amateur Digital Communications Group) created the first (I think) Amateur Radio TNC kit - the VADGC TNC.
>
> Inspired by the VADCG TNC, TAPR formed in Tucson and created the TAPR TNC (later renamed the TNC-1). This shared some lineage with the VADCG TNC (such as using a 6809).
>
> Inspired by the success of the TNC-1, TAPR created the TNC-2 using a Z-80 and an entirely new protocol, AX.25 (which the ARRL helped bring into existence).
>
> The TNC-2 was so successful (and well-advertised) that the day TAPR began to take phone calls to sell them, supposedly all of the incoming calls, for a while, overloaded the telephone switch in Tucson.
>
> TAPR offered licenses to build TNC-2 clones at reasonable prices (I never knew what the actual terms were - something like $10 or $25 per unit). Just from shuffling stuff around in my shop, AEA, PacComm, and other Amateur Radio manufacturers simply produced their versions of the TNC-2 (it was expedient - TAPR provided Gerber files of the PCBs, BOM, firmware, etc.). The manufacturers owed license fees for like a year after starting production and then they didn't need to pay. As I've heard it, TAPR's terms were very reasonable.
>
> It wasn't discussed much, but the technology of the TAPR TNC-2 was used as the basis of some kind of a telemetry system for the open pit mining industry.
>
> I think Kantronics very briefly offered a TNC-2 clone but quickly began to develop their own (unencumbered) firmware and chose to use the Motorola processors. That worked as they've been in business making the same products for decades now.
>
> PacComm and Kantronics and others quickly found commercial customers for their products and they quickly began developing products specifically for commercial customers. PacComm once told me that one of their best customers were railroads as they had lots of VHF channels that they could use for data.
>
> I've found catalogs from both PacComm and Kantronics for commercial customers that have been (or will be) contributed to Digital Library of Amateur Radio & Communications.

The problem remains for such developing a history of TNCs is *where* to publish it? Individually sponsored websites don't live forever, but might persist long enough to be archived by the Internet Archive. Another potential publication venue is TAPR's Packet Status Register newsletter which has been replicated in many places including Internet Archive. Wikipedia has proven that it's not a reasonable venue for niche technical content such as Amateur Radio Packet Radio, per this mention in **Zero Retries 0081**:

> Re: My followup on the idea of the Amateur Radio Omnipedia in Zero Retries 0080, the person who provided me with the example of the Packet Radio page on Wikipedia being dumbed down agreed to be named - my friend Larry Gadallah NM7A. NM7A provided this link to his fine work:
> https://en.wikipedia.org/w/index.php?title=Packet_radio&oldid=484794772
> *Yeah, we really do need a dedicated Amateur Radio Omnipedia so that work like NM7A's won't get corrupted by nitwit editors.*

AREDN Release 3.23.12.0

This release features a long list of improvements to Amateur Radio Emergency Data Network (AREDN)'s firmware for Wi-Fi and Wireless ISP equipment, including:

- Added supernode support.
  "Supernodes" are specially configured AREDN nodes in various locations which support a "mesh of meshes". With this release your localnode will automatically detect a nearby supernode, if one exists, and will show a new button on the Mesh Status page, labeled "Cloud Mesh". Clicking on that button will take you to the Mesh Status page of that supernode and show you all the nodes and services on the Cloud Mesh. You can navigate to any

of them as though they were on your local mesh.

- Cron:
  - Now run cron.boot tasks earlier.
  - Changed poll rate default to one hour.
  - Added installable cron package for people who need more functionality.

Space in this issue didn't permit me to reprint the entire release notes - see the link for the entire feature set of 3.23.12.0.

Zero Retries Interesting eBay - MFJ-462 Packet Multi-Reader Unit

Image courtesy of eBay seller adamcam1985

If I were more flush at the moment, I would buy the MFJ-462 Packet Multi-Reader Unit currently on sale on eBay for $75. I've not seen this unit previously, and it would be a neat addition to my packet radio collection. I did a quick web search, and this product has evolved in the present day as the MFJ-462B, MULTI-MODE READER, RTTY ASCII, CW, AMTOR… but it isn't as cool-looking as the original with that sloped display panel.

Also worth noting is that MFJ makes their entire 2023 catalog (90 pages!) available as a downloadable PDF. MFJ makes a *lot* of products that you won't see featured in catalogs from Ham Radio Outlet or DX Engineering.

HF Underground Discussion Community

I was previously unaware of HF Underground until it was casually mentioned in an email conversation. There's ample Zero Retries Interesting reading there.

> Shortwave Pirate Radio In North America And Around The World, And Other Signals That Go Bump In The Night
>
> We seek to understand and document all radio transmissions, legal and otherwise, as part of the radio listening hobby. We do not encourage any radio operations contrary to regulations. Always consult with the appropriate authorities if you have questions concerning what is permissible in your locale.

The Technical Topics section includes:

- Equipment
- Part 15 AM and FM Station Operation
- Propagation
- SDR - Software Defined Radio
- The RF Workbench
- Software

I casually looked at some of the sections that were of interest to me and was impressed with the high signal-to-noise ratio. HFU seems to do a good job in selecting (and training) its moderators to keep the "noise" to a minimum.

FCC Symbol Rate Removal for HF Bands Published in Federal Register

Ren Roderick K7JB reports:

> Finally showed up in this morning's (2023-12-07) listing👍
>
> https://www.federalregister.gov/documents/2023/12/07/2023-26770/amateur-radio-service-rules-to-permit-greater-flexibility-in-data-communications

So now begins the 30 days countdown to these regulatory changes being fully in effect.

Leave a comment

Share

Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- ***Founding Members*** **who generously support Zero Retries financially:**
  Founding Member 0000 - Steven Davidson K3FZT
  Founding Member 0001 - Prefers to Remain Anonymous 01

  Founding Member 0002 - Chris Osburn KD7DVD
  Founding Member 0003 - Don Rotolo N2IRZ
  Founding Member 0004 - William Arcand W1WRA
  Founding Member 0005 - Ben Kuhn KU0HN
  Founding Member 0006 - Todd Willey KQ4FID
  Founding Member 0007 - Merik Karman VK2MKZ
  Founding Member 0008 - Prefers to Remain Anonymous 14
- Numerous Annual and Monthly subscribers who also generously support Zero Retries financially!

Want to Support Zero Retries?

- The *most* effective way to support Zero Retries is to simply mention Zero Retries to your co-conspirators that are also interested in knowing more about technological innovation that is occurring in Amateur Radio and encourage them to become a fellow subscriber.
- One particularly effective method of promoting Zero Retries is to add a mention of Zero Retries to your QRZ page (or other web presence) and include a link:

  https://www.zeroretries.org
- If you'd like to financially support Zero Retries, becoming a paid subscriber is *greatly* appreciated and helps offset expenses incurred in publishing Zero Retries. Paid subscriptions for Zero Retries are *entirely optional*, as explained in this special issue of ZR:
  Zero Retries Administrivia - Activating Payment Options.

These blogs and newsletters regularly feature Zero Retries Interesting content:

- Dan Romanchik KB6NU mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Jeff Davis KE9V also mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories.
- Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC. It's a *must-read-now* for me!
- RTL-SDR Blog - *Excellent* coverage of Software Defined Radio units.
- TAPR Packet Status Register has been published continuously since 1982.
- Other Substack Amateur Radio newsletters recommended by Zero Retries.

These YouTube channels regularly feature Zero Retries Interesting content:

- HB9BLA Wireless by Andreas Spiess HB9BLA
- KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)
- Modern Ham by Billy Penley KN4MKB
- Tech Minds by Matthew Miller M0DQW

Zero Retries is currently using the Substack email publishing platform to publish Zero Retries. It's particularly suitable for small newsletters as you can get started for no cost.

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click below to join ***1100+*** other subscribers:

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Leave a comment

If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- SuperPacket blog — *Discussing new generations of Amateur Radio Data Communications — beyond Packet Radio (a precursor to Zero Retries)*
- N8GNJ blog — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs — Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA, and linked to the Internet via **Starlink *Satellite* Internet Access**.

2023-12-08

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Blanket permission granted for TAPR to use any Steve Stroh content for the TAPR Packet Status Register (PSR) newsletter (I *owe* them from *way* back).

1

I normally use the more conventional term “Mentor”, but 4Z1UG used “Elmer” so I’ll maintain that verbiage in this article.